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STATISTICS
OF THE
PRESENT EPIDEMIC OF SCARLET FEVER
IN NEW ORLEANS,

COMPILED AND ARRANGED BY

S. M. BEMISS, M. D.



From "The New Orleans Medical and Surgical Journal," July, 1876.

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In the present paper, and in those of a similar character relating to other diseases, which are expected to follow it, the writer will appear in the character of a reporter rather than that of an essayist. A different course would fail in doing justice to those who observe and furnish the facts, which it is my desire simply to compile and arrange. Still, whenever it shall appear to the advantage of the subject, I shall not hesitate to present collateral facts, or to make remarks which occur to my mind, tending to elucidate more clearly those truths which carefully gathered statistics always reveal.

On the 6th of May, two hundred printed blanks were distributed among the physicians of New Orleans, requesting information in regard to cases of scarlet fever observed during the six months ending April 30th of the present year. The period designated in the circular comprises the six months beginning with November, 1875, and ending with April 30th, 1876. The epidemic prevalence of scarlatina in this city dates to a time anterior to November 1st, 1875. From January 1st, 1875, to May 31st, inclusive, eight deaths were reported as having been due to scarlet fever. From June 1st to October 31st, the monthly returns of scarlet fever deaths were as follows: June, 8; July, 20; August, 21; September, 28; October, 18. It seemed to the writer quite a necessity that the statistics called for should be restricted to a shorter period than that of the whole epidemic, for two reasons: first, that greater accuracy might be secured by limiting the calls for reports to the six months just expired; second, that some positively defined term of observation should

be noted, that comparisons with the reports of the Board of Health might be made useful in determining some important questions connected with our subject of statistical study. These are the causes which induced the reporter to limit the call for statistics to the six months just elapsed.

The responses made to our circular have been sufficiently general to afford encouragement for the future of this method of study, and at the same time to authorize interesting conclusions relating to the present subject. The blanks returned embraced ~~cases~~ an aggregate of 587. This is a return of 1 in every ~~2~~ cases of scarlet fever which have occurred in this city within the limits of the time designated in the circulars. The following is the process of computation by which an estimate is reached. The mortality exhibited by the statistics presented herein is 1 in every 15.87 cases. The number of deaths occurring from scarlet fever as returned to the Board of Health for the six months designated in the calls for statistics, is 134. This number multiplied by 15.87, yields 2126 as the estimated number of cases occurring in this city during the term of investigation. 3.62

One who has been engaged as extensively in the study of medical statistics as the present reporter, acquires a feeling of respect and veneration for those statistics which exhibit inherent evidences of truth. The experienced statistician has but little difficulty in discovering whether the items returned to him have been carefully or loosely gathered. There is one great law of statistics, whose application to their study proves the correctness or falsity of all considerable aggregates. This law is based upon the essential predicate, that, in every mass of medical statistics made up by summing together individual reports, the majority of the individuals reporting will furnish reliable facts. If under any circumstances, a minority of the reporters are either careless or unfaithful in making up their returns, we have only to go on increasing our volume of statistics until the errors relating to the minority are hidden by the preponderating mass of facts furnished by the majority. It hence follows that, as soon as the medical statistician has gathered a sufficient number of facts, he has a safe criterion by which to measure each individual group which enters into the aggregate.

But the experienced statistician has another equally legitimate mode of testing statistics. This is, to select several groups, however small, which from the character of the reporters can be

assumed to be strictly correct, and construct of these a standard by which to measure the whole mass, both *seriatim* and in gross. Both of these modes of test have been applied to the statistics herein presented; and it is due to the contributors to state that, in only one single instance, was there so considerable a departure from the mathematical uniformity of the remainder as to invite even the slightest criticism. This disturbance of harmony related to the very small death-rate the group in question exhibited. This group is included in the report, and the results are not appreciably altered by its incorporation. In truth, many individual practitioners can recall experiences in times of epidemic prevalence, when, without claiming superior skill, or being able to define in what, if any, particular exercise of virtue, their superior success rested, they were still able to congratulate themselves upon a death-rate far below that of their surrounding professional friends.

While, in perfect fairness to my contributors, I consider these prefatory remarks proper and called for, I shall not hesitate to vouch for the accuracy of the results and general conclusions appearing in the following pages.

I shall arrange the statistics for their critical study under headings corresponding with those of the circulars upon which they have been returned. The following table exhibits in a condensed manner, the facts collected under headings 1, 2 and 3, of the circular, and at the same time has a column added which is designed to show an estimate of the whole number of cases, with results, which actually occurred in the city during the six months ending April 30th. The process adopted in this computation has been previously explained.

Table I.

	Actually reported.	Re-Number Estimated.	Percentage.
1—Number of cases for six months, ending April 30th, 1876.....	587	2126	27.62
Simple Form.....	377	1363	64.22
Anginose Form.....	177	423	19.93
Malignant Form.....	38	137	6.47
Irregular Form.....	10	36	1.70
Not classed as to Form.....	45	163	7.66
2—Recovered, without Sequælae.....	273	988	46.40 <i>16.54</i>
" with Sequælae.....	97	351	30.66
" No statement as to Sequælae.....	180	651	
3—Died. In primary attack.....	20	72	3.40
" From Sequælae.....	17	61	2.89
Total Deaths.....	37	134	6.30

The percentages in this table have reference to the aggregates in column 1, with the exception of that at the head of the column, which exhibits the percentage of the estimated number of cases which were actually reported.

1--Number of Cases. Our records of the medical history of this city afford very meagre accounts of the prevalence of scarlet fever, whether in endemic or epidemic form. I think, however, that it may be safely assumed that scarlet fever germs are not infrequently entirely extinct here, a condition which seldom or never obtains in equally large centres of population situated in our more Northern States, or in Europe. Minor, in a very interesting paper on Scarlet Fever in the United States, ventures to formulate certain propositions, some of which directly touch this locality. Those of his propositions necessary to be mentioned in this connection are: "No. 3. Another zone of comparative immunity in the western hemisphere extends from 30° to 35° north latitude. 4. In times of pandemics, occasional epidemics occur at points within the zone of comparative immunity." The very important investigations of Prof. Chaillé into the prevalence of various diseases in this city do not sustain Dr. Minor's third proposition, in so far as we are concerned. During a period of thirteen years, divided in three series, as follows, 1856 to 1860 inclusive, 1863 to 1865 inclusive, 1866 to 1870 inclusive, scarlet fever caused 1038 deaths in this city. Admitting a mortality rate during all these periods identical with that pertaining to the present epidemic, 16608 cases must have occurred, to have given the above stated number of deaths. The year 1864 seems to have been one of decided epidemic violence, since 200 deaths are reported. In 1871 five deaths were ascribed to scarlet fever; in 1872, three deaths; in 1873, three deaths; in 1874, four deaths; in 1875, one hundred and forty-four deaths. We must be cautious in declaring any population to enjoy immunity from scarlet fever, even though for a number of years few or no cases are observed. For 21 years, 1809 to 1829, the number of deaths caused by scarlet fever in Philadelphia was 108. For five consecutive years of this period, not a death was occasioned by this disease. We all know, however, that Philadelphia has suffered under severe epidemics of scarlet fever.

Forms of the Disease Reported. One principal object in making

the effort to obtain a classification of the cases reported, which should conform to that usually adopted in the text-books, was to ascertain whether any special relation existed between either form and the occurrence of sequelæ. Such is the erratic nature of scarlet fever, that its symptomatic phenomena vary with different epidemics, and the classification of one visitation may be quite reversed in the ratio of prevalence or intensity of the respective forms. These facts tend to destroy the utility of such information, in so far as the primary attacks are concerned. But if it can be ascertained that some clinical form of primary symptoms is more liable than others to sequelæ, it is a very important practical gain, since we become admonished of the approach of a danger which is susceptible of prevention.

The mortality rate of primary attack can be safely assumed to depend upon the ratio of simple cases attending any given epidemic. In this declaration I do not lose sight of the proper signification of the word "simple," as used to designate a clinical form of scarlet fever. It does not imply mitigation in the severity of symptoms so much as it implies conformity to type, and regularity of clinical career. A simple case may therefore be an intensely violent case, and yet no fatal impingement of morbid action upon a particular structure or apparatus is likely to occur, because of its equable distribution throughout the system. I think the study of the classification by forms afforded by Table I. interesting, however little practical benefit may accrue from it. Under the heading "Irregular Form," some interesting facts are reported which will appear more properly among clinical observations. No instances have been reported of the co-existence of scarlatina and rubeola, although both of these eruptive fevers have been epidemic during the latter half of the period of research.

2—*Recovered without Sequelæ—Recovered with Sequelæ.* Quite a number of interesting facts have been reported under these captions, which will appear *in extenso* under headings Nos. 4 and 6.

3—*Died (a) in Primary attack, (b) from Sequelæ.* The mortality rate of various scarlatina epidemics is eminently a shifting one. According to Thomas (Ziemssen's Cyclopaedia, Vol. II.), "Epidemics where the mortality is below 10 per cent. may be regarded as benign epidemics, comparatively speaking." Measured by

this standard, our late epidemic has proved a mild one. The aggregate mortality rate per cent. has been 6.30. My own convictions are, that a more positive mode of testing various epidemics in respect to mildness or violence of character, is to measure them by the rate per cent. of deaths occurring in primary attacks. Intensity of epidemic force, increased personal receptivity, or weakened personal resistance to epidemic attacks, are the factors which concur in the production of the most virulent visitations of zymotic disease. Either, or all of these factors tend to the production of fatal results in a speedy manner; consequently, short duration of fatal cases is a correct measure of violence of attacks. The rate per cent. of deaths during primary attacks is ~~2~~ 4.0; that due to sequelæ is 2.89. These percentages are very probably smaller than those marking scarlet fever epidemics in the more northern cities of the United States. Smith (*Diseases of Children, Third Edition*) says: "The mortality rate varies greatly in different epidemics. In epidemics of a mild type, the mortality is sometimes not more than one in twelve, and the ratio may be less; whereas, if a severe form is prevailing, not more than one recovers in every two, three, or four." Meigs & Pepper observed 274 cases, distributed through a series of years, and comprising a number of groups relating to various epidemics, and the best results they report are 1 death in 14 cases. A tabular arrangement of deaths was constructed for insertion here, but it was afterwards judged to possess too little interest to merit publication.

4—*Sequelæ—remarks upon character of and various forms of.* No part of the study of scarlatina is more interesting than that which concerns its sequelæ. Do they depend upon a morbid process essential to the disease, or are they merely accidental consequences dependent upon some mismanagement, or other fortuitous circumstances, connected with the primary attacks? Do they principally follow the mildest cases, and therefore indicate that an energetic expression of regular symptomatic phenomena is a safeguard for the future of the patient? Does any one clinical form of the disease inflict upon the patient additional danger of sequelæ—if so, what form is thus distinguished? These are questions of profound interest to the physician. Unfortunately, it may be, my report will not furnish sufficient evidence to justify satisfactory adjudication of either of these mooted points. Still

it will bring to the great garner of facts some additional gleanings. We may therefore congratulate ourselves upon the aid we afford to the ultimate elucidation of these points.

The most common of the sequelæ reported is renal dropsy. This is not peculiar to scarlatinal epidemics here, but is probably generally true. Meigs & Pepper found dropsy to ensue in 31 of 274 cases, or 11.31 per cent. Steiner (*Compendium of Children's Diseases*) states that, "The percentage of kidney complications in scarlet fever varies from five to seventeen." The percentage of all cases of sequelæ, including those which were fatal with those which recovered, is 19.42. The percentage of cases of kidney complications is 11.24. The percentage of kidney complications in the gross number of cases of sequelæ is 58.76. This, however, does not represent the precise facts of the epidemic as it respects the actual proportion of cases followed by renal dropsy. In one report, comprising an important number of cases, the reporter stated that an unknown number of his patients had suffered from renal complications as sequelæ. Cases thus reported do not, of course, enter into computations appearing herein, except in respect to such points as are explicitly stated.

Next in point of frequency among the sequelæ are affections of the cervical glands. It is to be inferred from the general tenor of statements of those reporting, that in more than half of the cases in which inflammation of cervical structures occurred, abscesses resulted. In three instances the abscesses followed inflammation of connective tissue, but in all cases they are represented as having gland structures for their points of departure. One reporter indicates the parotid as most frequently the seat of adenitis. Another mentions the parotid and sublingual glands. One case is reported of abscess on both sides of the neck, which required to be opened, and which discharged a large amount of fetid pus. Cervical abscess was the cause of death in two instances. In one of the fatal cases it was "deep-seated, and commenced on the twelfth day." The mode of death is not more precisely stated, but it is to be presumed that it took place from exhaustion. The other instance in which death was due to abscess, took place under my own observation and treatment. A child, aged two years, died of hemorrhage, presumably from sloughing process involving the facial artery, as that was the nearest considerable vessel to the point of ulceration. As the

case had connected with it rather an interesting question concerning its proper treatment, it will be more particularly considered under that head.

Aural inflammations were very common sequelæ. One excellent observer reports "abscess with perforation of both drums" in one case, and abscess with perforation of one drum in another instance. No case of permanent loss of hearing has been reported, but several instances of temporary deafness are found among the reports.

Discharge from the nares is frequently mentioned among the reports of sequelæ.

Vulvitis with purulent discharge is reported in two instances. These cases, with treatment adopted, will be again referred to under head of treatment.

Neuralgic affections, rheumatism, and joint inflammations, are mentioned by five reporters. One of this number mentions a case of synovitis, terminating in purulent accumulation.

In two instances, fever of a typhoid type followed the primary attacks, resulting favorably. The reporters do not, in either of these instances, explain the probable causes of the continued fever.

Three deaths are ascribed to renal dropsy. In one of these cases the death is attributed to pericarditis. Four other instances of implication of cardiac structures in the scarlatinal process, are mentioned in the reports. These were all endocardial; three involving the mitral valves, and one the semilunar valves of the aorta.

Now, as to the inquiries made at the beginning of the discussion in regard to the character of sequelæ. It must be admitted that nothing is reported in definite answer to the first of these inquiries. It is, in truth, a question whose solution involves a knowledge of the precise mode of action of the scarlatinal poison in and upon the human economy. There is a growing tendency in the profession to look upon scarlatina, as well as rheumatism, as a disease whose unusually wide range of morbid action accounts for the great number of different organs implicated, rather than mere accidental metastasis. Entertaining this view of the pathology of scarlet fever, and placing the kidneys within the range of morbid action, it would appear quite as natural for them to become points of localization of intense inflammation as the skin, or the throat. The proposition some-

times advanced, that the kidneys are sacrificed by the mischief inflicted upon them as channels of elimination of scarlet fever poison, is scarcely tenable. A qualified advocacy of the affirmative of these inquiries is in no manner inconsistent with the correctness of the pathological doctrines above stated. We are unable to interpret the laws which govern the mode of systemic diffusion of scarlatinal poison, but knowing, as all physicians do, the derivative effects of a local inflammation, we are well prepared to admit that patients suffering from intense eruption, or the anginose forms, are in some measure protected against nephritis. In every instance in which reporters have given in observations in regard to these points, their testimony is in perfect accord in regard to the relations between renal dropsy and mild primary attacks. Three cases of renal dropsy are reported consequent upon attacks so light that medical aid had not been invoked. Another reporter, who furnishes thirteen cases of renal dropsy, declares that "all of them followed the mildest cases."

The statistics upon which this report is based, justify these propositions:

1. That simple and mild cases were more liable to renal complications as sequelæ than were other forms of the disease.
2. That anginose attacks were followed by sequelæ in larger ratio than any other form of the disease—the sequelæ being in these instances abscesses, otorrhœa, ozena, gangrenous conditions, and septic states of the system.
3. That the death-rate of sequelæ following anginose primary attacks, is greater by far than that of sequelæ following simple attacks.

More extended observations are necessary either to set these propositions aside, or to extend their authority.

5—*Observations of Age, Sex and Color.* The reports bring considerable interesting matter to be arranged under this caption. In 420 cases, in which general statements were made respecting the ages of patients, 404 were reported as minors. Of the 16 adults, one was 45 years of age, one 35, and one 30. The youngest patient reported was a child of 9 months. Of 83 instances in which the ages were reported with precision, the average was 9 years and 5 months. Those interested in these figures will quickly understand that wherever a partial report of ages was

made, extremes would naturally attract the attention of reporters and be sent up for record. This would hold especially true of extremes in the direction of advanced age, since it is a recognized fact in medicine, that immunity from scarlatina attacks increases in direct ratio to increment of age. But, fortunately, there is at hand a standard by which the accuracy of these figures can be measured. A painstaking and admirable worker in our profession has reported 55 cases, in each of which the age of the patient has been carefully noted. The average age of this group of cases is 8 years 11 months and a fragment. In another group of 12 cases observed by myself, the average age was 8½ years. To aid in illustrating the infrequency of scarlatinal attacks in adult subjects, it is worthy of mention that of 5385 deaths of persons insured in the New York Mutual Life Insurance Company, only 10 were occasioned by scarlet fever.

I am not willing to declare that the statistics returned in respect to ages of those attacked, are exponent of the actual standard of averages which more extended observations may exhibit. The average above shown is at variance with most authorities, in representing the standard at a more advanced period of life. This point is fully discussed by Thomas, Murchison, Meigs & Pepper, West, and Smith. Whatever may be the conclusions of some of the above named writers adverse to such a decision, I do not hesitate to express a belief that a high average age of attack in scarlatinal epidemics is proof of infrequency of epidemic visitation. Whatever may be the degree of immunity from scarlatina conferred by advancing years, no one contends that it is complete. Granting that it is not complete, the longer the intervals between epidemics, the greater must be the proportion of adults who are subjects of attacks.

Sex. Sex was noted in 167 cases of those reported. The result was 78 males, 89 females. Two, or more, of the reporters, stated that males were more often subjects of attacks than females. It is quite probable, therefore, that a fuller report would have reversed the result of these observations.

Color. This point was noted in 404 cases. The result was 369 whites, and 35 colored. It is difficult to admit that these figures represent the true ratio of frequency of scarlet fever attacks in the white and colored races. The 5th of Dr. Minor's propositions is: "When scarlatinal epidemics occur

within zones of comparative immunity, the disease attacks by preference the Caucasian race." Prior to the recent civil war, Kentucky and South Carolina were the only slave States which attempted to keep in operation, laws requiring a registration of all births, marriages and deaths, occurring within their respective borders. In the former State, the deaths ascribed to scarlet fever for the six years 1852 to 1857 inclusive, were 1754 whites and 232 blacks. The census of 1850 gave Kentucky a population of 761,413 whites, and 220,992 blacks. If we base a computation upon this estimate of population, it will give one death from scarlet fever in every 434 whites, and one in every 951 blacks. It is unnecessary to explain to an experienced statistician that these figures do not claim mathematical precision, but they are sufficiently accurate to represent a fact that, for a period of six consecutive years the death-rate from scarlet fever was lower in that race than in the Caucasian race. The rate per cent. of mortality among the colored patients reported is 11.42, nearly double that presented in the table of aggregates (page 4). This is quite in keeping with every candid statement regarding the ravages of acute diseases among these unfortunately circumstanced people, given over, as they seem to be, to politics, improvidence, crime, disease, and death.

6—*Clinical Observations.* It is to be regretted that full reports have not been made under this heading. Whatever may be the erratic nature of scarlatina touching its symptomatic phenomena, or the influence of epidemic force in changing them, the study of its symptoms is one of deep interest. Every practitioner who has had any considerable experience in observing cases of this malady, has, no doubt, been often puzzled to know the significance of symptoms attending primary attacks. Symptoms frightfully violent and sudden are very common manifestations of the primary effects of scarlatinal poison, especially as it relates to the nerve centres. While those exceedingly malignant attacks which seem as it were to begin in death, are unquestionably aggravations of these disturbances of nerve function, many accessions of the disease marked by terrible nervous commotions result in recovery. The line which separates the two classes of cases is too indeterminate for prompt or positive demarcation. Trousseau once said that the rapid pulse of scarlatina was worth much as a diagnostic, and nothing as a prog-

nostic. In a qualified manner, a similar remark may apply to those dreadful nervous commotions which distinguish attacks of this disease.

In a number amounting to nearly or quite half of my cases, the first symptom was a sudden attack of emesis. Those who were sufficiently advanced to be able to report subjective symptoms, complained of cephalalgia and chilliness. One of my cases was inaugurated by a convulsion. It ran a favorable course and terminated without sequelæ.

The highest record of temperature noted was 108°—the patient a female, 11 years of age. The observer adds that the “urine was albuminous throughout the case.” The highest recorded temperature in the simple form of the disease is 105°, with a pulse of 168. Upon the next visit (presumably the next day), temperature 105°, pulse 160; third visit, temperature 102°, pulse 131. A white female, eight years of age, had a temperature of 105°, pulse 146. Another white female, aged 20 years, had upon three consecutive visits the following exhibits of temperature and pulse: 104.5°, pulse 136, 102.2°, pulse 130; 102°, pulse 114.

These were all simple cases. One reporter states that in the simple form the temperature is rarely noted above 103°. The same observer adds, that in the anginose cases the temperature sometimes rose, in severe cases, to 106°. “In the malignant variety,” continues the same excellent observer, “the temperature was not much elevated.” Only one observation is reported which indicates that a different condition, as it respects febrile movement, is liable to be connected with the malignant type of the disease. A male negro, aged 28 years, died on the third day of the disease; the temperature in the axilla was 106.2°.

No special reports concerning the pulse have reached me other than the one recorded above. One reporter states that he had found that the pulse afforded very unsatisfactory data concerning the patient's condition.

From the general tenor of the reports, it is obvious that a majority of medical practitioners are accustomed to treat scarlet fever without examinations of urine, except in so far as relates to the quantity and gross appearances of the secretion, unless symptoms of uræmic poisoning, or dropsy, call for a different procedure. A number of reporters make it a special point of mention that the renal secretion had been carefully watched from

the beginning of the attacks, but few, however, seem to have subjected unsuspected secretions to a chemical test.

One reporter has paid sufficient attention to the urinary secretion in the primary stages of the disease, to feel justified in announcing the opinion that albuminous urine in the primary attack was a much more grave event than albuminuria as a sequel. This proposition is certainly sustained by analogical reasoning, if not by direct observations. In all other acute diseases in which albuminous urine is an early event, it is supposed to result from deperdition of the blood. Its appearance is therefore, to some extent, a measure of the devastation wrought upon that fluid by the presence of the morbid poison. On the other hand, albuminous urine as a sequel may be regarded as being due to inflammatory processes in the kidneys, susceptible of resolution and cure, provided they are not so serious as to kill by complete arrest of kidney functions. Some very remarkable instances have been reported of tolerance of, and recovery from, the most extraordinary conditions of suppression and perversion of urinary secretion. One of these cases had "albuminuria, convulsions, and temporary strabismus; totally unconscious five days; had general dropsy. These symptoms commenced at the middle of the fourth week after the primary attack, and lasted for ten days before permanent convalescence began. The urine was turbid with blood, and very scanty for seven days, during which time he lay in a state of lethargy, recollecting nothing which occurred, and at times it was very difficult to nourish him. The patient was a boy of about 10 years, of previous good health, and under the most favorable circumstances of hygiene and nursing."

The most common attendants upon albuminuria as a sequel, were convulsions, cephalgia, vomiting, dropsy, hematuria, and more or less suppression of urinary secretion.

A very interesting fact is found in the report of one of the best observers in this city. This is the occurrence of a "periodical increase of albumen," corresponding, in respect to intervals, with malarial manifestations, and, without doubt, due to the influence of that poison.

Certain irregularities of clinical career are worthy of mention. Absence of eruption was noted in four instances. Seemingly true relapses were noted in two cases. One of these occurred under my own observation. B. L., white female, aged 7 years,

seized, March 25th, with vomiting, chilliness, headache, and fever subsequently. On the 26th the rash appeared. The case ran a regular course, with symptoms sufficiently specific to render a diagnosis absolute. The patient was dismissed convalescent on the 2d. of April. On the 10th of the same month she was seized with a chill, followed by headache, fever, and severe sore throat. The punctated efflorescence over the fauces was so strikingly identical with the appearances presented in primary attacks, that I exclaimed to her father—a medical practitioner himself—"If a genuine relapse in scarlet fever is a possible occurrence, here is surely one." On the 12th, patches of redness were observed on various parts of the skin, but as the surface had been pretty generally frictioned with various embrocations, it could not be determined whether or not the redness was from this cause. The child had constant fever, and very great enlargement of the left side of the neck. On the 16th, an abscess in the left tonsil ruptured, discharging a considerable quantity of pus, after which some apparent amendment was observed. During the primary attack, and up to the 19th of April of the second attack, no chemical examination of the urine had been instituted. It was sufficiently abundant, and gave us no reason to expect any abnormal constituent. On the 19th of April the urine became diminished in amount to such degree that complete suppression was considered imminent. From the 19th until the 26th, the whole amount collected was by actual measurement $\frac{5}{16}$ iiss. We estimated a loss of $\frac{5}{16}$ iiss, which would make the aggregate amount secreted $\frac{5}{16} \times 2$ iiss. The urine was red from the presence of blood, and coagulated to a jellied mass under application of heat and acid. The microscope revealed great quantities of blood corpuscles, blood and tube casts. During the period of partial suppression, it was not possible to obtain at any one time enough urine to fill the tube for measurement with the urinometer. After the secretion was resumed the quantity rapidly increased, until on the 5th day of May 64 ounces were passed, with a specific gravity of 1005. May 6th—Quantity, 46 ounces, s. g. 1004. May 8th—40 ounces, s. g. 1002. It is proper to mention in this connection, that on Saturday, April 22d, a colored woman, previously nurse to the child, came to visit her. Some of the family observed that her face and eyes were much swollen, but not until the next day was it discovered that the nurse had just entered upon the stage of eruption of measles. Sunday night,

April 30th, the patient had a severe chill, followed by fever, catarrhal symptoms, and the eruption of measles, Wednesday, May 3d. From all this terrible accumulation of complications, the patient gradually emerged to complete convalescence. The urine continued to exhibit traces of blood and albumen as late as the 10th of May. During the period of scanty urine, the patient suffered with frequent attacks of vomiting, much cephalalgia, and a precordial pain difficult to account for; but with the exception of these rather ambiguous symptoms, no evidences of uræmic intoxication were present. Sleep was quiet, the mind clear, and no convulsive tendency present. The only manifestations of dropsy were puffiness of the face and slight pitting about the ankles.

Some of the reporters have stated that in the irregular cases, diagnosis had to be rested upon the pulse, temperature, and throat.

7—Treatment. All medical investigations and labors are at last directed to the same great and desirable end of curing, palliating, or preventing disease. I cannot do full justice to the work I have undertaken to execute, in respect to the practical feature of treatment of scarlatina, or full justice to my collaborators, by epitomizing, or in any manner altering their reports touching this point. The reader will therefore find the remarks in full, of a large majority of those who responded to the circulars. In some few instances no report was made under this heading; in several other reports, the words "Expectant," "Symptomatically," or "Of the simplest form," conveyed in a forcible manner the mode of procedure adopted by the reporter.

"On general principles, having always in view the reduction of the temperature and too rapid heart's action, the agents used have been the tincture of aconite with a gentle diuretic, sweet spirits of nitre, from the commencement of the attack.

"For the cases of anginose forms of scarlet fever, the local application has been mild solutions of nitrate of silver twice a day, and hot poultices. In some cases, where the patient could gargle himself, I have used with very decided success a combination of borax, chlorate of potassa, and rose honey—half a drachm of each to eight ounces mixture, avoiding always irritant doses."

M.

“Mostly expectant. In all, however, carbolized inunction three or four times a day was practised, till convalescence was well established. One part of acid to six of olive oil was used. In the only case of a serious character—as reported above (see page 47)—active purgation, diuretics, dry-cups over the kidneys, vapor baths, etc., were all resorted to at different times, followed by a quinine and iron tonic” L.

“In mild cases gave laxatives, cool drinks, astringent and anti-septic gargles, inunctions with lard, and observed general principles of hygiene.

“In severe cases, used cold spongings to the fullest extent the prejudices of the people would allow.

“The case which died during primary attack (see page 48) would not permit cold water treatment until 12 hours before death, when I instituted the cold pack, remained with patient 2 hours, renewed the pack, and ordered its continued renewal every 2 hours until temperature should subside. As soon as I left the house the cold sheets were replaced by hot blankets.

“Cases of simple albuminuria and anasarca were treated with warm baths, laxatives and diuretics (potass. nit., st. aether nit. and *digital.*). Convalescents were given quinine and tinct. ferri mur. Where urgent symptoms supervened in sequæ, strong purgatives, calomel, jalap, ext. colocynth co., and even elaterium, were used; wet-cups along the spine, and blisters.” P.

“Tincture of iron and carbolic acid from the first—2 to 7 drops of the former, and from $\frac{1}{2}$ to 2 drops of the latter, every 3 hours.

“Water, to which chlorate of potash had been added, was given *ad libitum*.

“Wherever the temperature rose to 102° , sponged freely with water acidulated with vinegar. Anointed the whole body after sponging, with carbolic oil. Had the room ventilated, and changed clothing when it became soiled.

“For albuminous urine and dropsy, gave cathartics, applied wet or dry cups to lumbar region, and gave warm baths.

“Where blood appeared in urine, continued iron and gave fld. ext. of ergot in from 10 to 20 minim doses. Two cases treated recovered rapidly.

“Careful and systematic nourishment, such as beef-broth, milk, milk punch, etc.” W.

"Mercurial cathartie, if seen early in attack. Warm foot and general baths. Oleaginous inunctions." H.

"Whenever seen in time, after the initiatory eruptive stage, I used small doses of chlorate of potash and tincture of chloride of iron, with happy effect. To facilitate desquamation, and to relieve the tension and harshness of the skin, I used sweet oil, castor oil, and skin of bacon. I also used quinine by inunction.

"I may add one additional case, which I saw *only* AFTER recovery, yet suffering with some anasarca, which yielded to the potash and iron, and frictions with whiskey.

"I used small quantities of bismuthi. subnit. by insufflation for the relief of the catarrh, and simple washes of tepid water and castile soap for the ears." M.

"In very nearly all my cases I used the chlorate of potas. for the throat, and used internally: R—Tinct. ferri mur. ʒi, pot. chlor. ʒi, acidi mur. ʒi, tinct. digitalis ʒi, aquæ ʒii. M. 30 drops every three hours in sweetened water, with nourishing diet and cooling drinks. I treated the renal sequelæ with a mixture of bitart. potash and honey, and had a good result. I also used quinine in some of the cases, but my success seemed to be due to the first named mixture. In a case of diphtheritic sore throat, I used the inhalations of atomized tannin by the steam atomizer." D.

"Expectant in every case, except in such as were attended with kidney troubles, when digitalis, squills, and calomel were administered, until the secretion of urine was restored. Tonics of bark and iron subsequently administered. Applications of lard to the skin invariably soothed and disposed to sleep. Jaborandi, administered in the case which proved fatal, produced profuse sweating but without relief to symptoms." L.

"In the case of the gentleman aged 30 years, the febrile symptoms were slight, but the soreness of the throat was marked. He had been for several days in close attendance upon his daughter, six years of age. Ten days after the subsidence of the throat trouble, slight but continuous fever returned, accompanied within twenty-four hours by general anasarca, well-marked but not severe. Urine albuminous one-fourth. Under well-

sustained cathartie and sudorific treatment, wet cups over kidneys, followed by a course of ferruginous tonics, patient made a good recovery.

“Two little girls, sisters, aged 11 and 8 years, passed through the disease with the usual symptoms of fever and sore throat, but very mild in character. Three weeks after convalescence had commenced in the eldest, she was seized with high fever accompanied by severe pain in the hypogastrium. The general features of the attack were those of a simple case of bilious fever, which responded most favorably to a free mercurial purgation. In two days convalescence was re-established. During this last attack there was evidence, in the local pain and redness, of a decided vulvitis. When this passed off, there commenced a free purulent discharge from the entire mucous surface of the vulva and vagina. This lasted for six weeks, resisting all the methods of treatment common in such conditions. A mild solution of permanganate of potash did much good. Finally, the trouble seemed to yield to the local application of carbolic acid and tannin in glycerine (very weak), and the internal administration of cod liver oil and the ferrated elix. of calisaya. During the six weeks of the continuance of this trouble, there were two attacks of the fever in every respect like the first, except milder.

“It is peculiarly interesting that the sister, aged eight years, one month after her convalescence from the scarlet fever was seized exactly in the same way, with a fever like the first case, pain in the hypogastrium, vulvitis and vaginitis, purulent discharges following, and which continued two months. In this case, also, there were two relapses of the vulvitis, and other acute symptoms. When, in both of these cases, the local trouble had become chronic, it seemed to respond more favorably to the influence of a tonic and nourishing course than to local applications.”

H.

“As to the treatment of scarlet fever, physicians often have peculiar notions of their own. But there is one thing that we all know, and that is, that it is a self-limited disease, running a certain course, accompanied and followed by two (if you will allow the expression) other diseases—one diphtheria, the other dropsy. Although this is not always the case, yet we must, as far as possible, anticipate these complications, trusting to time

and nursing for the cure of the eruption and fever. This has been my course for several years past. As to medicines, first a mild purgative, usually a few grains of calomel—2 to 6 grains—with twice as much magnesia. If that does not act on the bowels, followed by castor oil or some saline purgative. Then, to moderate the fever, liq. ammonia, acetat., combined with spts. nitri and liq. morph., to quiet restlessness and as mild diuretics. But the principal thing to be looked after is the ulceration of throat, for which I use tinct. ferri chloridi $\frac{5}{ii}$, potass. chlorat. $\frac{5}{i}$, and syrup $\frac{5}{ii}$. M. Teaspoonful every three hours, diluted with water when used, as a gargle and also taken internally. I resort to other treatment as the case and condition may seem to require; not treating the name of the disease, but the condition present. If dropsy supervenes, small doses of calomel, potass. bitartras with jalap, and diuretics." W.

"The treatment was simple. Not much medication was practiced. I usually found constipation to exist in the incipiency of the disease, and gave a mild purgative; sometimes a small dose of calomel, if the tongue was furred and excretions checked. My object was to place nature, or the organism, under the most favorable circumstances, and in this way direct the attack or tide over it, sustaining the system in the most judicious manner possible. Some cooling febrifuge, controlling somewhat the circulation, during the height of the fever, together with greasy applications to abate the heat and lessen the itching, gave great comfort, and were probably the best and safest anodynes. The throat affection—one of the chief local manifestations of this constitutional malady—was treated mainly with simple gargles, such as tincture of iron and chlorate of potash, lime water, tannin, etc. The cervical glands often suppurated, and especially the parotid and other posterior glands, frequently behind the mastoid muscle. The three that died from the sequelæ all had extensive suppuration of the glands, accompanied with a continuous irritative fever of a typhoid type; also more or less rheumatism. It was sought to relieve the congested state of the kidneys, which produced the albuminuria and effusion, by equalization, as it were, and diversion; by moderate purgation, chiefly with cream of tartar, or something tantamount, and warm baths to encourage perspiration, at the same time always attending sedulously to the nutrition to reorganize the blood, and in

this way give an impetus, as it were, to the atonic state of the vessels and tissues. I found a fine tonic to be, in this state, equal parts of Squibb's or Battley's ergot, and muriated tinct. of iron, given in frequent but moderate doses. All the cases of albuminuria and effusion recovered, and some after having convulsions from uremia."

B.

"General plan of treatment was to keep patients warm until the setting in of convalescence. In a few cases, the bed was kept but 5 or 6 days, in others as many as 25 or 30 days. Allowed cool drinks (not ice), milk and broth diet. Had the skin anointed with leaf-fat, or French tallow, as long as there existed desquamation.

"Complications of lungs were combatted by kermes and brandy, and Alimentary Elixir of Duero. Gave quinine with slightest suspicion of malarial influence. I blistered once or twice in congestion of lung, and think to some advantage.

Dropsical complications were met by a combination of digitalis, scammony, and scillæ, and I confess that I thought that with this combination, I could predict an amelioration of symptoms in the 24 or 48 hours.

At the offset of the disease, I have in a few cases given a vomit of ipecac and a slight purge, but do not advocate either, excepting to meet certain conditions, etc."

W.

"In mild cases, saline laxatives; frequent sponging with tepid vinegar and water; cold acidulated drinks, either lemonade or vinegar. In the more severe cases I administered acetate of ammonia, with excess of the salt; acidulated drinks; an application to the throat of tinct. ferri mur. with potass chlor.; support throughout, beef-tea, milk, wine, and constant tepid sponging during febrile stage. When desquamation began, inunction. Sponging resumed if fever returned.

Renal dropsy, of which thirteen occurred in my practice, readily yielded to copious purging with croton oil, followed by potass. bitart. as a diuretic, and the vapor bath daily. No subsequent impairment of health that I can discover has ever resulted."

H.

"Chlorate of potash in 5 to 10 grain doses every 2 or 3 hours; sulphate of quinine when the temperature became elevated, or previous to the period when once ascertained. Tincture of iron

in 5 to 20 drops doses, according to age, at the period of desquamation. Tincture of iron and also cod-liver oil, to the case with scarlatinous buboes; the swellings painted with the tincture of iodine, in the hope of aborting the same; finally the use of the lancet, and poultices.

“In the two cases of dropsy from kidney affection following the scarlet fever, tinct. of iron in 5 to 10 drops doses every 3 hours; infusion of semina and manna in purgative doses; stimulating frictions to the back; diaphoretic drinks, beef-tea, and light nourishing diet.” D.

“In mild cases, treatment consisted in mild cathartics and cooling drinks, with an aqueous solution of potassa sulphas *pro re nata*. Anginose case, active cathartic, and scarification of the tonsils and parts adjacent, in addition to the treatment in mild cases. I can not speak too highly of the cooling drinks, provided the surface of the body is kept covered and warm at the same time.” H.

“During primary stage, liq. ammonia acetat. with tinct. acconiti; the wet pack applied to the throat constantly, until eruption faded or the throat symptoms abated.

“Inunctions of the skin during desquamation.

“In the anginose case, the ulcers in the throat were daily brushed with a strong solution of nitrate of silver.

“On the appearance of any throat trouble, chlorate of potassa was given internally.

“In case of anasarca, acetate of potassa was given in infusion of digitalis.” H.

“In the four successful cases simple treatment was used, laxatives, diaphoretics, chlorate of potash, sometimes tincture of iron, gargles or washes of tincture of myrrh, alum, borax in solution. In addition to the above, the iron excepted, there were used in the fatal case, quinine, calomel, oil of turpentine, carbonate of ammonia, and as a modifier of the throat affection, sulphurous acid in the drink. In this case, as already stated, the only remedy that did any good was the sponging, which had a marked effect in reducing momentarily the temperature of the surface.” M.

“Treatment was necessarily varied according to circumstances.

Generally, however, the bowels were evacuated at the outset, and a mixture containing quinine, chlorate of potash, and tincture of iron, was given. When cinchonism would appear, the quinine would be omitted, but recourse would again be had to its use as soon as its unpleasant effects would disappear. I was induced to give quinine steadily, because it seemed to me that, during the last three months, a distinctly appreciable malarial wave complicated my cases of scarlet fever. In many of my patients intermittent symptoms were clearly evident. Quinine was well tolerated, and I do not remember to have ever regretted its use. Attention was paid to diet—beef-tea, broth, milk, and alcoholic stimulants were used. Ice and iced drinks were freely employed. Attention was paid to the condition of the skin. In cases of kidney trouble, the bowels were kept acting. Warm baths, dry cups, blisters, and other revulsive agents were brought into play. Various diureties were employed. Among these, some were directed to the heart and kidneys, and others to the kidneys alone. Milk was freely used, not only as a dietetic agent, but also as a diuretic. The Bethesda water was used in three cases of kidney obstruction: in one instance it appeared useful, in the others no result was noticed. Iron, in various forms, was used in the different stages of the disease. In certain varieties of kidney trouble, gallie and tannic acids, and ergot were given. The throat troubles were treated in different ways. Chlorate of potash, tannic acid, tincture of iron, and carbolate of iodine, etc., were employed. The carbolate of iodine seemed, in five or six cases, to be peculiarly successful. The foregoing remarks concerning treatment are necessarily general, as I have preserved no written notes of my cases. It is hardly necessary to add, that the condition of the skin was very closely watched, that exposure to cold was studiously avoided, and that the customary inunctions of the skin were carefully recommended. Frankly, however, I cannot say that I was satisfied with the results obtained from the lard inunctions." L.

I have very few remarks to make in addition to the abstracts of treatment given above. I have given quinine to every patient to whom I was called during the stage of invasion. With every renewed opportunity of observing the effects of this drug upon the pyrexia preceding the eruptive stage of scarlet fever, my confidence in its favorable action is increased. Its therapeutic effects appear to be manifold: an apyretic; a nerve tonic—per-

haps lifting and toning up the system above the depressing influences of scarlatinal poison, as is conjectured in respect to its action upon the malarious constitution, and a modifier of the excessive waste due to the scarlatinal processes. An important objection to its exhibition is the liability to induce nausea. This can be obviated by using solutions in enemas of flaxseed emulsion. While it has not been my habit to continue it during the eruptive stage, I have never failed to appeal to it as an anti-suppurative remedy in anginose ulceration or abscesses, and often as a counter agent to atonic states of the system during convalescence.

Another remark which I desire to make, relates to the treatment proper to institute in very grave cases of buboes. My usual practice is to resort to hot, moist applications, changed often, and applications of tinct. iodine once or twice daily until the irritation of the skin requires its omission. Twenty or more years ago, in deference to a popular belief in its efficacy, I constantly used the slices of salt bacon which Smith praises so unstintingly. At that time it certainly appeared to me good practice.

A question of importance relates to the surgical treatment of the lymphadenitis in its gravest forms. The highest authorities (Thomas, Gee, etc.) advise to open as early as the collection of pus can be determined. Every experienced practitioner understands that this advice is based upon the tendency to burrow which attaches to scarlatinal abscesses. But is it justifiable practice to make incisions into these hard tumors before purulent accumulations can be detected? This became a question in a case dying under my care from hemorrhage, and referred to on a preceding page. The tumor was so large and pressed so firmly upon the trachea, that death seemed liable to occur at any moment from suffocation. Deglutition was also extremely difficult. These symptoms were so urgent that the indication was in my opinion an almost imperative one for an attempt at immediate relief. After leaving the patient, I accidentally met one of the leading medical gentlemen of this city, and stated the case to him, inquiring at the same time how it was possible for me to lessen pressure around the tumor by draining it of extravasated fluid and yet avoid the risk of dangerous hemorrhage. He suggested aspiration with a hypodermic syringe. Upon returning with the intention of attempting this mode, I found the

symptoms greatly aggravated, and the tumor so brawny and resisting that I feared to waste further time by using the syringe. I at once passed a sharp pointed bistoury into the tumor, making a deep incision. Quite a considerable quantity of bloody serum, and shreddy material escaped. Warm poultices were again applied, and by the next morning the size of tumor was reduced, and the child's respiration and deglutition were better performed. The puncture was made on Friday, Dec. 31st, 1875. On the morning of Wednesday, Jan. 5th, one side of the incision looked of an ash color, and fearing hemorrhage, I explained my fears to the parents of the patient, and ordering a solution of perchloride of iron and some lint, gave instructions what course to pursue in case the apprehended event should occur. During the ensuing night sudden and profuse bleeding took place, resulting fatally in less than two hours.

I have prescribed ergot for the bloody and albuminous urine of nephritic complications. The prescription used was Squibb's fluid ext. ergot, 5j; dilute sulphuric acid, 3ss; syrup poppies, or syrup blackberry, 5viss; teaspoonful every 2 to 4 hours. To this prescription I have occasionally added, gallic acid, grs. xij to xvij. While I cannot positively declare that curative effects followed these prescriptions so uniformly as to justify the assumption of a relation between them, I am yet so well satisfied with results that I shall continue the prescription.

The propositions in reference to treatment may be stated as follows:

1. We know neither an antidote to, nor a sure eliminator of, the scarlatinal poison, therefore our safest treatment is "symptomatic," or "expectant."

2. The symptoms which most frequently demand our care in the simple form, are excessive temperature and excessive skin inflammation. For these, the cold douche, cardiac sedatives, and inunctions afford the best therapeutics.

3. The anginose variety requires additional treatment by the local application of astringents, alteratives and disinfectants to ulcerated surfaces, proper attention to lymphadenitis, and especially those tonics and blood depurants which prevent or cure septic states of the system.

4. The treatment of the malignant form of scarlet fever should be varied to meet the varying conditions present. One reporter mentions that the highest temperature noted was in a malignant

case; another states that the malignant cases observed showed lower records of temperature than other forms of the disease. I am satisfied that both were strictly accurate in their observations. Troussseau's remark, "that scarlatina, especially when its form is malignant, is of all diseases that in which the temperature of the body rises to the highest point," should not be understood to be applicable to all cases of the malignant form. While our choice between the cold douche or sponging, and warm baths, may be governed by the heat of the surface, there is good reason to believe that upholding measures of treatment are proper for all malignant cases. Quinine, carb. ammonia, small opiates, alcoholic stimulants and forced nutrition, are the means of cure usually most beneficial.

5. Scarlatinal dropsy is amenable to cure by hydragogue purges, diuretics, diaphoretics, and blood restoratives.

6. Severe sore throat in scarlet fever is liable to be followed by gangrenous, suppurative, or septic processes in the system, attended by low forms of secondary fever, and requiring local and general measures of treatment, which, however carefully varied to meet particular conditions present, yet often fail to cure. The sequelae of the anginose form are therefore more serious as points of treatment than renal complications.

8—*Contagium; Incubative Period; Preventive Means; General Remarks.* It is to be admitted that the degrees of intensity of all epidemics—whether this intensity relates to the symptomatic violence of their attacks, or to the universality of the diffusion of their germs, should not be regarded as matters of mere chance, but rather as being determined by laws sufficiently fixed to render them sooner or later, subjects of remunerative study. Scar'atina exhibits extraordinary eccentricity in all of its leading features, but in no one essential characteristic is this more strikingly shown than in the anomalous behavior of its contagium. At one time it appears to be so unsparing in its sweep that very few of the unprotected escape. At other times, its contagium exhibits so little of this fierceness that comparatively few attacks result, whatever may be the apparent amount of exposure. The introduction of the word "apparent" in the last sentence implies a want of knowledge of those conditions which give life and activity to scarlatinal disease germs. If they possessed as much uniformity in regard to repro-

duction and activity as the variolar poison, we would be able to predicate some rules respecting liability to attack after exposure. Consequently we could then speak with more certainty of greater or less degrees of exposure. But there is nothing of regularity in scarlatinal infection. Often we observe one case only, occur in a large family, or children's asylum, although no means are used to prevent its spread. Again, we see it over-leaping all the preventive measures with which we seek to surround our patients for the protection of the well. I think it a reasonable inference that this eccentricity is due to circumstances affecting the contagium, rather than to any circumstances or conditions which may be supposed to affect the human system so as to alter personal receptivity of the poison. A subtle contagium, which undoubtedly is endowed with attributes resembling those of organized substances, may show widely differing states of activity and virulence, subject to atmospheric or telluric influences not susceptible of formulation in our present state of knowledge.

No report has been made of observations tending to show the period at which a scarlet fever patient is most likely to infect persons brought within range of infection. Nor have any facts been furnished, which indicate that the scales of the desquamative stage are either chiefly or partially vehicles of communication. No doubt, Thomas expresses truth when he says "it may be presumed that the contagion enters from the blood into all the secretions and excretions of the patient."

In a crowded city, with scarlet fever epidemic among its entire population, reports in regard to the incubative period have all the liability to fallacy which must arise from the indefinite multiplication and diffusion of infecting foci. I venture, however, to report from my own practice, two cases in which pretty fair opportunity was afforded to observe the periods of incubation.

C., aged 13 years, spent Saturday, January 29th, at the residence of four children who had never had scarlet fever. The disease had for some time been prevalent in C.'s family, and one case was convalescing at the time of her visit. At dinner she occupied a chair situated between two of the unprotected children—M., aged 13, and H., aged 8 years. On Wednesday, Feb. 2d, H. complained of chilliness, headache, nausea and vomiting, and sore throat. The rash appeared on the following day, and a very severe example of the anginose form of the disease

resulted. The other children present at the dinner escaped attacks. No other case occurred in H.'s family, although the only preventive measures were exclusion from H.'s chamber. In this case, about 86 hours elapsed after exposure before symptoms manifested themselves, while the non-eruptive stage lasted some 20 hours.

B. L., aged 7 years, lost a little brother from pneumonia complicating hooping-cough, March 21st. She attended the funeral March 22d. Taken ill on the 25th; eruption appeared on the 26th. M. L., aged 4 years, was suffered to enter at will the chamber in which B. L. was confined, and no measures were employed to prevent infection. M. L. remained free from attack until April 23d, when scarlet fever was inaugurated with a chill and convulsive seizure. On another page of this report, the reader will find that B. L. suffered under symptoms strongly indicative of a true second attack of scarlet fever. If M. L. contracted the disease from B. L., we must assume, either that the germs from the primary attack infected her, which would indicate an incubative period of 20 days or more, or that the relapse produced the infecting material, which would imply an incubative period of about two weeks. Thomas reckons the incubative period of scarlatina at an average of from four to seven days. My own observations teach me to look with distrust upon histories of cases claiming a period of incubation longer than a fortnight.

No cases were reported of parturient females suffering under attacks of the epidemic, nor any instances of extraordinary personal liability to be affected by the poison.

The measures of prevention most often resorted to were isolation and the disinfection of rooms and bedding occupied by patients. Several cases were alluded to in which no spread of the disease occurred, although neither isolation nor any other means of prevention was resorted to. The following instance will illustrate the above statement. The family of H., a German baker, comprised three children, aged respectively 4 years, 2 years, and 3 months. The child aged 2 years was attacked December 22d. I saw it for the first time on the 24th, when an abundant rash covered the surface. The child died on the 14th day of the disease. The other children were kept in the same room with the scarlatinal case, and yet neither one suffered an

attack. Instances of this sort are unquestionably sometimes made to contribute in bestowing upon belladonna its totally unmerited reputation in preventing scarlatinal attacks. One reporter sends up a case in which he administered belladonna, to a child as a preventive, and naively added that it "turned out to be the worst case he had."

General Remarks. In the admirable compendium of Children's Diseases, by Steiner, we find the following paragraph: "A very dreadful kind of scarlet fever is every now and then met with, where the child succumbs almost directly to the most violent symptoms, without the forewarning of any prodromata. These cases sometimes run their course from beginning to end in thirty-six or forty-eight hours, almost even before the eruption has appeared, the only symptoms being vomiting, loss of consciousness, coma, violent delirium, or convulsions, with a most abnormal and continuously high state of the temperature. They are generally the forerunners of an epidemic, and are not unfrequently seen in children who are very healthy." On Saturday, April 8th, I was summoned to visit G. H., a remarkably healthy male child aged two years. It was 12½ p. m. when I reached the patient. The history given me, was that the child had arisen in perfect health and partaken of a hearty breakfast with his usual appetite. After this meal he had played with various members of the family, when about 10 o'clock he suddenly grew pallid and commenced vomiting. The emesis persisted until after my arrival and the administration of a dose of calomel, prepared chalk and opium, and the application of a spiced poultice over the epigastrium. At the time of my visit, the child had high fever, a rapid pulse, and red cheeks. He took little or no notice of anything said or done in his room. His mother stated that he complained of his throat when first seized with his ill fit, but no evidence of inflammation could be noted either internally or externally. In the course of the afternoon, several small alvine dejections occurred, fluid in character, seemingly due to the calomel. Quinine was given under a fear that malaria might have caused the attack, although the entire absence of prodromes, and the fast pulse, and rather florid surface, led me to make a probable diagnosis of scarlet fever. During the night convulsions were so strongly threatened, that I prescribed bro-

mide of potash with a small opiate. This did not prevent their occurrence at about 6 o'clock a. m. of Sunday. Dr. T. G. Richardson now saw the case with me, but the child soon fell into a semi-comatose state, and death ensued at 2½ p. m. of the second day of illness. The indications of an eruption were so indefinite, that I unhesitatingly rejected all those appearances which were pointed out by the very intelligent nurses who had care of the child.

A point in the history of this case is proper to be mentioned. In a house adjoining that of G. H., lived the family of B., which comprised several children unprotected by previous attacks of scarlet fever. On Wednesday, 5th of April, G. H. visited the family of B., and played with the children, more especially with one just his own age. This child was seized with sudden illness on Wednesday night, and died in about 24 hours. The fact that the children had been associated so shortly previous to their sudden deaths, led to suspicion of accidental poisoning. There were no symptoms present which I could account for by imputing them to any poison, or combination of poisons, likely to be within reach. I therefore requested a post-mortem, which was granted in so far as it related to the abdominal cavity. This was done by Dr. Richardson and myself, Monday, April 10th. Nothing was discovered, either as it respects the solids or the fluids, which accounted for death. The B. child was attended by Dr. P. C. Boyer, who informs me that no symptoms of scarlet fever had been manifested in any member of the family before, or after the child's death, although several of the children, directly after these events, had fevers distinctly malarial in their character. At the time of these deaths, scarlet fever was present in one or more families in the same square. I do not venture to diagnose this case as one of scarlet fever, and it does not figure in the enumerations of this report. I cannot, however *account* for the death in any satisfactory manner, other than by referring it to an overwhelming toxæmia from the maladies morbi of that disease.

To illustrate yet further the analogy between this case and some which occurred in this city during a former epidemic of scarlet fever, I will copy here the account of instances of sudden death from malignant scarlet fever observed by Dr. F. Downer.*

* See N. O. Med. and Surg. Journal, vol. iv., p. 562.

Report of several Cases of Scarlet Fever. By F. Downer, M.D., of New Orleans.

CASE 1.—Dec. 12th, 1847, called by appointment, at 4 p. m., to prescribe in a chronic case, for a member of a large family. Before leaving, I was requested to look at their son, a boy of seven years, who for several days had been laboring under what appeared to be a bad cold, but on this day he seemed so much worse, they began to feel uneasy.

I found him with a high fever; great difficulty in swallowing; mind confused and wandering; tongue dry, and loaded with a thick dark coat; teeth covered with sordes; with a slight eruption on the face and neck, of a livid hue. I at once pronounced it to be malignant scarlet fever of a typhoid type. Ordered cold effusions to the head and face; a gargle of infusion of capsicum, alternated with one of sage tea, honey and alum. Tens grains calomel, with four of ipecac, in four powders, one to be given every three hours till it operated; to be followed with flaxseed tea, or barley water, acidulated with lemon juice.

13th. Skin hot and dry; oppressed breathing; countenance haggard; great restlessness, with delirium. Owing to the unmanageableness of the patient, the directions had been but slightly fulfilled: a part of two of the powders had been given, and brought away two discharges of very dark offensive matter. Ordered one grain tartar emetic to an ounce of water, a tea-spoonful every half hour till it acted as an emetic, with volatile liniment to the throat. He vomited slightly, but so great was the difficulty of deglutition that but little more was done; delirium, with frequent convulsions during the night, and on the morning of the 14th he died from suffocation.

CASE 2.—At daylight on the morning of the 17th, I was called to visit an older brother of the deceased, aged nine years. He had appeared well up to the day previous, when he was engaged the greater part of the day in shopping with his mother. Came home late, and very much fatigued, but ate an unusually hearty dinner of vegetable soup, meat and potatoes, which in an hour or two he threw up, and without making any complaint, soon after retired to bed. When I saw him, he was laboring under short, quick, and anxious breathing; pulse rapid, and vibratory; increased heat of the head, whilst that of the body was but little above the natural standard. There was uneasiness of the throat, with hoarseness and a slight enlargement of the tonsils; great intolerance of light, mind confused and wandering.

Gave an emetic of antimonial wine, which caused him to eject a large quantity of tenacious,ropy mucus, with decided relief. 8 o'clock.—Ten grains calomel with five of ipecac to be followed with flaxseed lemonade; cloths wrung out of cold vinegar and water to be constantly applied to the head.

12 o'clock. The bowels moved; feces of a light clay color, and highly offensive. Warm sage tea, continue cold applications to the head.

At three o'clock I was sent for in great haste, as the boy was believed to be dying. On arriving, found him almost in a state of collapse—pulse weaker and quicker; had had two discharges since I saw him at 12 o'clock, the last involuntary, and in the highest degree offensive. Ordered weak brandy toddy, a starch injection with laudanum, and dispatched a messenger for my friend Dr. Harrison. The heat of the body being greatly diminished, with the pulse at the wrist quite imperceptible, we applied sinapisms to the abdomen, ankles and wrist; gave sub-carbonate of ammonia alternately with the brandy toddy.

At 6 o'clock we again met; he was now insensible to surrounding objects; great jactitation, constantly tossing his arms about, and moaning. These symptoms seeming to indicate a high degree of gastric inflammation, the idea of poison suggested itself to the mind of Dr. H.; but on pressure of the abdomen and over the region of the stomach, not the slightest evidence of tenderness or pain did he evince, nor had he from the commencement, as I had frequently examined these parts, and asked the question while he was able to answer. He now rapidly sank till death closed the scene, during a convulsion, at 8 o'clock, it being but little over twelve hours since I was called to see him. An examination of the body was not permitted.

CASE 3.—Dec. 23d. Was called at 7 o'clock, a. m., to see a daughter of five years; found her with slight fever; frequent, but not very full pulse; dry, brown tongue; some swelling of the throat, with slight redness of the tonsils and difficulty of breathing; bowels constipated. Prescribed senna and manna, flaxseed lemonade; vol. liniment to the throat, with a flaxseed poultice.

11 o'clock. The bowels had been moved once freely, feces light and offensive with scybala and undigested food. Another discharge very copious, same color, without scybala or food. Ordered twelve leeches applied to the throat, and to take a tea-spoonful of the following mixture every two hours—

Muriate ammonia, $\frac{3}{4}$ ss,
Emetic tartar, 1 gr.,
Ext. glye, $\frac{3}{4}$ j,
Aqua dist., $\frac{3}{4}$ iv.

7 o'clock. Leeches had drawn well; had had another passage of the same kind; kept up the mixture, with the same drinks, and frequent sponging of the head and face with vinegar and water.

24th—8 o'clock. Much better, would not take any more medicine; during the morning asked for tea and dry toast, which was granted.

25th. Much improved; the rash well developed; tongue clean,

with papilla very elevated; bowels costive; order senna and manna; to be kept quiet. From this time she improved rapidly.

While I regret that a post-mortem examination was not allowed in the second case, I am satisfied, on a review of all the symptoms, that this was a case of a regular congestive form, and that the head, and not the stomach, was the part most affected. The tendency to assume the typhoid type so early in the course of the disease, can only be accounted for by the peculiar contagion to which he had been exposed; and this, as Dr. Good remarks, "under a depressed state of the living power, whatever be its cause, whether a want of cheerful warmth, cheerful passions, cheerful food, or cheerful and regular habits, typhus is often more likely to take place than any other species of fever. But when febrile miasm, produced by a decomposition of effluvium from the living body, exists in a coöperation with these, it is almost impossible for an individual to escape; as the miasm thus generated has a specific power—a power beyond all other febrile causes whatever, of lowering still farther the vital energy as soon as it is received into the system, and thus of confirming the tendency to this peculiar type." In this instance, the boy suffered much during the last hours, and after the death of his little playmate; he had slept in the same bed with him, until within two days of the death of the latter—was taken sick immediately after a long and fatiguing walk, the hearty dinner he ate assisting still more to depress the exhausted vital powers. The weather for two weeks preceding had been unreasonably warm and rainy; the thermometer, for about ten days, had ranged over seventy degrees, while the location was damp and low. All these causes acting on an existing predisposition; hence the sudden overpowering shock, under which the system gave way in so few hours, and while the medicine was apparently doing its offices kindly. Dr. Armstrong is the only author I know who describes this form of scarlatina. He says, "the subjects of this modification are for the most part suddenly attacked." "Sometimes they at once sink as if overcome by a sudden shock, and lie in a state of confusion and oppression, without making much complaint." "The mind at first alarmed, confused or dejected, soon becomes disordered with delirium, or an indifference to surrounding objects, and a stupor succeeds under which patients finally expire."

In two other very severe cases of scarlatina anginosa which I treated a week before, both the parents suffered from severe sore throat, attended with febrile symptoms, but no efflorescence of the skin; an adult member of the first family labored under soreness and swelling of the fauces, unattended with febrile symptoms, thus showing the protean nature of the disease, and the degree of virulence it assumes according as it is met by a predisposition, or otherwise. As regards my experience, scarlet fever is most to be dreaded of any of the diseases incident to childhood, whether considered in its immediate consequences or

as regards its results. As Dr. Francis observes, it is one for which we have no prophylactic; and in this climate delay in resorting to immediate remedial measures is so often fatal, that active treatment should be commenced from the first suspicion of the complex form of the disease; and then, alas! the bills of mortality tell with what success.

In conclusion, I sincerely thank those of my confrères who have kindly given aid and encouragement to this mode of studying disease. Whilst I shall not venture to speak of it as a complete success, the results appear to me sufficiently satisfactory to justify a further prosecution of the undertaking. I shall therefore issue new blanks within a few days, and again request the assistance of my professional brethren in studying some other disease in a statistical manner. In the mean time, I invite from those concerned the most free and critical comment in regard to the manner in which I have discharged the duties of a reporter. If I voluntarily undertake to represent the views and observations of my brethren in regard to any professional subject, I shall not seek to shun responsibility for the proper execution of these trusts.

I regret that a table of errata must be appended to the report, but absence from home during the time when the first forms were worked off, occasioned several errors so important as to demand notice.

ERRATA.

Page 37, 10th line, from for “—” read 3.62.

Page 38 (Table), 16.54 should be inserted between 46.40 and 30.66.

Page 40, for “attack” read attacks.

Page 42, fifteenth line from bottom, for “all cases” read all other cases.

Page 45, fourth line from top, for “scarlatina” read scarlatinal.

